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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/164,392	09/30/1998	DONG-GYU KIM	33404/DBP/Y3	6608

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EXAMINER
LANEAU, RONALD

ART UNIT	PAPER NUMBER
2674	

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37

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/164,392	KIM, DONG-GYU	
	Examiner	Art Unit	
	Ronald Laneau	2674	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 March 2003* .

2a)☒ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,13 and 16-21* is/are rejected.

7)☒ Claim(s) *11,12,14 and 15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Response to Amendment

1. The amendment filed on 3/25/03 has been entered. Claims 1-21 are still pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 4-6, 9, 10, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moriyama (US 5,790,092) in view of Kim (US 5,604,358).

As per claim 1, Moriyama teaches a method of driving a liquid crystal display having a matrix of a plurality of pixels with a common electrode and a pixel electrode, comprising dividing a plurality of pixels into a plurality of groups, each group comprising a plurality of pixels that are adjacent to each other (see figs. 13A, 13B), applying a common voltage to the common electrode, applying a data voltage of a positive polarity and a negative polarity with respect to the common voltage alternately to groups of a plurality of pixels that are adjacently located (see figs. 13A, 13B), wherein the polarity of the data voltage applied to each of the pixels in each group is the same (see figs. 13A, 13B). Moriyama does not explicitly teach that the distance between a first data line for a first pixel electrode is greater that the distance between a second data line for the second pixel but Kim teaches a device of thin film liquid crystal display wherein a plurality of gate lines 12 are formed in a fixed interval on a transparent substrate 11, a plurality of first data lines 13 are formed at right angle to the gate lines 12 discrete at parts

crossing the gate lines 12, second data lines 14 are formed spaced a certain distance to the first data lines13 so as to be 1:1 matched with the first data lines, a plurality of third data lines 16 formed above the second data lines 14 connecting between the second data lines (col. 3, lines 54-62, fig. 4).

It would have been obvious to one of ordinary skill in the are to utilize the structure of Kim as to the different distances between the data lines for the pixel electrodes into the device of Moriyama because it would reduce crosstalk as well as degradation coming from a capacitance developed between the common electrode formed on the upper plate and the data lines formed on the lower plate therefore improving the picture quality of the liquid crystal display (col. 5, lines 28-32).

As per claims 4 and 5, Moriyama teaches a method wherein data voltages having the same polarity or different polarities with respect to the common voltage are applied to the adjacent pixels on the same column (see figs. 13A, 13B).

As per claims 6 and 17, Moriyama teaches a liquid crystal display comprising a substrate, a plurality of gate lines formed on the substrate, a plurality of data lines insulated and intersecting the gate lines and transmitting a data voltage; and a plurality of pixels formed corresponding to respective regions defined by the data lines and the gate lines, wherein a common voltage is applied to the plurality of pixels, and wherein polarities of the data voltage with respect to the common voltage are inverted in a unit of pixel group, and wherein the pixel group is comprised of two or more pixels (see figs. 13A, 13B). Moriyama does not explicitly teach that the distance between a first data line for a first pixel electrode is greater that the distance between a second data line for the second pixel but Kim teaches a device of thin film

liquid crystal display wherein a plurality of gate lines 12 are formed in a fixed interval on a transparent substrate 11, a plurality of first data lines 13 are formed at right angle to the gate lines 12 discrete at parts crossing the gate lines 12, second data lines 14 are formed spaced a certain distance to the first data lines13 so as to be 1:1 matched with the first data lines, a plurality of third data lines 16 formed above the second data lines 14 connecting between the second data lines (col. 3, lines 54-62, fig. 4).

It would have been obvious to one of ordinary skill in the are to utilize the structure of Kim as to the different distances between the data lines for the pixel electrodes into the device of Moriyama because it would reduce crosstalk as well as degradation coming from a capacitance developed between the common electrode formed on the upper plate and the data lines formed on the lower plate therefore improving the picture quality of the liquid crystal display (col. 5, lines 28-32).

As per claims 9 and 10, Kim teaches a device of thin film liquid crystal display wherein a plurality of gate lines 12 are formed in a fixed interval on a transparent substrate 11, a plurality of first data lines 13 are formed at right angle to the gate lines 12 discrete at parts crossing the gate lines 12, second data lines 14 are formed spaced a certain distance to the first data lines13 so as to be 1:1 matched with the first data lines, a plurality of third data lines 16 formed above the second data lines 14 connecting between the second data lines (col. 3, lines 54-62, fig. 4).

As per claim 18, Moriyama teaches an LCD wherein adjacent two pixels in row direction have different polarities of the data voltage As per claim 7, Moriyama teaches a method wherein the pixel group is comprised of three pixels as claimed (see figs. 13A, 13B). 2B).

5. Claims 2, 3, 7, 8, 13, 16 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moriyama (5,790,092) in view of Hashimoto et al (6,295,043) and further view of Kim (US 5,60,358).

As per claims 2 and 7, Moriyama does not teach a method wherein the pixel group is comprised of three pixels but Hashimoto et al teach a pixel group which is comprised of three pixels as claimed (see fig. 14). Neither Moriyama nor Hashimoto explicitly teaches that the distance between a first data line for a first pixel electrode is greater that the distance between a second data line for the second pixel but Kim teaches a device of thin film liquid crystal display wherein a plurality of gate lines 12 are formed in a fixed interval on a transparent substrate 11, a plurality of first data lines 13 are formed at right angle to the gate lines 12 discrete at parts crossing the gate lines 12, second data lines 14 are formed spaced a certain distance to the first data lines13 so as to be 1:1 matched with the first data lines, a plurality of third data lines 16 formed above the second data lines 14 connecting between the second data lines (col. 3, lines 54-62, fig. 4).

It would have been obvious to one of ordinary skill in the art to utilize the pixel group comprising of three pixels taught by Ito et al into the teachings of Moriyama because it would not only utilization of Hashimoto et al's frame compositions of figure 14 including x1 to x6 provide the suggestion of grouping the set of three pixels together but would control the unevenness of the display in the direction of the signal electrode (normally the vertical direction) and would not cause an especially severe uneven display in the direction of the signal electrode nor flickering even when the display contents change one after another (see Ito et al , col. 4, lines 5-9). Further, It would have been obvious to one of ordinary skill in the are to utilize the

structure of Kim as to the different distances between the data lines for the pixel electrodes into the combined device of Moriyama and Hashimoto because it would reduce crosstalk as well as degradation coming from a capacitance developed between the common electrode formed on the upper plate and the data lines formed on the lower plate therefore improving the picture quality of the liquid crystal display (col. 5, lines 28-32).

As per claims 3 and 8, see rejection of claim 2. Further Hashimoto et al do teach a pixel group which is a red, a green and a blue as claimed (see fig. 4).

As per claim 13, and LCD wherein a voltage is applied to the common electrode (col. 13, lines 20-24).

As per claim 16, Hashimoto et al teach a method wherein the pixel group is comprised of a column of red pixels, a column of green pixels, and a column of blue pixels (see fig. 4).

As per claims 19-21, the examiner takes the official notice that having an LCD wherein common electrodes are parallel, adjacent, and formed on the substrate on which the pixel electrode are formed is well known in the display art.

Allowable Subject Matter

4. Claims 11, 12, 14, and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

None of the references, either singularly or in combination, teaches or even suggests:

As per claims 11 and 12, an LCD wherein the gate lines are divided into gate line groups, each gate line group comprising a first gate line, a second gate line adjacent to the first gate line, and a connecting member coupled between the first gate line and the second gate line.

As per claims 14 and 15, an LCD wherein a plurality of common lines are connected to the common electrode, and the plurality of common lines are divided into a plurality of common line group, each common line group comprising a first common line, a second common line, and a connecting member coupled between the first common line and a second common line.

Response to Arguments

5. Applicant's arguments filed on 3/25/03 have been fully considered but they are not persuasive.

Applicant's arguments with respect to the newly added limitations are moot in view of the new rejection.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ronald Laneau whose telephone number is 703-305-3973. The examiner can normally be reached on Monday-Thursday from 8:00 AM to 6.00 PM or via email: ronald.laneau@uspto.gov.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe can be reached at 703-305-4709.

7. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Ronald Laneau
Examiner
Art Unit 2674

rl
June 2, 2003

RICHARD HJERPE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600